author here dug up a Cæcilian (*Cæcilia virgata*), and amused himself with the curious leaf insect (*Phyllium siccifolium*).

The Introduction to the book is followed by a long paper by Prof. Möbius on the Foraminifera of the Mauritius, illustrated by many finely-executed plates. Amongst other Rhizopods a Haliphysema occurs, the animal which, by a most extraordinary blunder, was made out by Häckel to have a multicellular structure, and supposed to represent a Gastræa of modern times. Prof. Möbius confirms the observations of Carter, Savile Kent, and Ray Lankester, to the effect that the animal is in reality simply a Rhizopod. He has examined the structure of the Foraminiferous shells which he describes, very carefully by means of sections. He does not, however, add anything of importance to our knowledge of the structure of the soft tissues of the group.

An account of the Decapod Crustacea by Dr. F. Richter follows that of the Foraminifera. Two crabs of most extraordinary habits are described in this portion of the work. Both belong to the family Polydectinæ. The crabs of this family have their front claws armed with large teeth. Latreille, who first named the crab *Polydectes cupulifer*, remarked that a gummy substance was always to be found at the ends of the claws of this species, and Dana described the animal as having always something spongy in its hands. Dr. Möbius has discovered the remarkable fact that these things held in the two claws of the crab are in reality living sea-anemonies. These sea-anemonies are attached to the immovable joint of each claw, whilst the teeth of the movable joint of the claw are kept buried deep into the flesh of the sea-anemonies, and thus hold them fast, although each anemony can easily be pulled away from its position with the forceps in specimens preserved in spirits. The mouth of the sea-anemony is always turned away from the crab. The same curious combination exists in the case of another species of the same family but of a different genus, *Melia tessellata*, which also inhabits Mauritius. A figure is given of this crab with its pair of Actinias, named by Möbius *A. prehensa*, with fully expanded tentacles, held out one in each hand. Möbius gives the following account of the matter. "I collected about fifty male and female specimens of *Melia tessellata;* all of these held in each claw an *Actinia prehensa.* The recurved hooks of the inner margins of the claw joints of the crab are particularly well adapted to hold the Actinias fast. I never succeeded in dragging the living Actinias out without injuring them. If I left the fragments of them when pulled out lying in the vessel in which the *Melia* was, the crab collected them again into its clutch in a short time. If I cut the Actinias in pieces with the scissors, I found them all again in the claws of the crab after a few hours. It is very probable that the Actinias aid the crab in catching its prey by means of their thread-cells, and that the Actinias, on the other hand, gain by being carried from place to place by the crab, and thus brought into contact with more animals which can serve as food to them, than they would if stationary. This is a very interesting case of commensalism."

The work closes with a long account of the Mollusca of Mauritius and the Seychelles by Prof. E. von Martens.

H. N. MOSELEY

NOTES

THE centenary of the birth of George Stephenson is not to be allowed to pass by in a fruitless way in Newcastle-upon-Tyne. Dinners, speeches, trade-processions, enthusiasm and bunting—all this was to be expected in a place so intimately connected with the birth of railways. But more than this will probably be done, and we are glad to hear that a scheme is on foot for commemorating the 9th of June in a more useful and more lasting manner, viz. by providing a "Stephenson College" for the use of the houseless but hard-working College of Physical Science of the University of Durham in Newcastle.

THE French Association for the Advancement of Science has been in existence only ten years, but in that short time it has met with astonishing success, and has done some excellent work. To the fifteen sections already existing it proposes to add a sixteenth, under the name of the Section of Pedagogy, and a committee of members will discuss its formation at the forthcoming meeting at Algiers. The subjects of which the Association takes cognisance are divided into four groups, viz., Mathematical Sciences, Physical and Chemical Sciences, Natural Sciences, and Economic Sciences. A goodly list of papers has been already announced, among the authors of which we notice some of the most prominent *savans* in France. We trust, however, that the Association will not degenerate into a great excursion organisation, as to some extent it appears to have done this year. Thus the meeting lasts for six days, while the return tickets, issued in connection with the Association under very liberal terms, are good for six weeks, and no less than fifteen excursions in the neighbourhood of Algiers have been arranged. Five of these each occupy a week, and one of them a fortnight. The great number of applications for tickets both from France and Spain compel us to imagine that in many cases the membership of the Society has been sought this year rather for the sake of the tempting excursions than for the love of science. April is one of the most lovely months in the year at Algiers: the mean temperature is 16·5° C., with a possible minimum of 8°, and a possible maximum of 30°. In May the mean temperature is 19·5° C., and there may be eight days of rain; while at Biskra the maximum may be as high as 40° C. (104° F.), and not more than one day of rain may be expected in May. A proclamation has been issued by the local committee asking the inhabitants to place rooms at the disposal of the visitors. Among those who will cross the Mediterranean will be Admiral Mouchez, MM. Quatrefages, Wurtz, Saporta, the naturalist, M. Cartaillac, the geologist, and many others, who will give interesting papers on a variety of subjects.

MR. ASHTON DILKE tried in vain on Tuesday to get the House of Commons seriously to consider the advisability of adopting the decimal system of coinage in this country. It is hopeless in the present state of public affairs to induce Parliament to attend to a matter of this kind. On the widely beneficial results of the adoption of the metric system in whole or in part we have often insisted. That there would be some inconvenience in making the transition, of course every one will admit; but as compared to the ultimate benefits from the adoption of the metric system, they are not worthy of consideration. Mr. Dilke does well not to let the matter drop out entirely of public notice.

THE Thore prize of the Académie des Sciences of Paris has been awarded to M. A. Vayssière, préparateur des cours de Zoologie à la Faculté des Sciences de Marseille, for an anatomical memoir of *Prosopistoma punctifrons*, Lat. Some of our readers interested in comparative anatomy may remember having seen the original drawings in London last summer, and will be glad to know that it will soon be forthcoming. M. Vayssière is a careful expert.

THE French Minister of Public Instruction intends to do a great service to science by publishing monthly a *résumé* of the scientific work being done over France, under the title of *Revue des Sciences*. The review will be under the direction of the venerable M. H. Milne-Edwards, and will consist exclusively of analyses and summaries, but of sufficient detail to give a fair idea of the nature of the work being done. It will embrace the work of individuals and of societies all over the country, and each number will contain about 100 pages.

M. DELESSE, a member of the Institute, vice-president of the Geographical Society of Paris, and author of a number of works and papers on geology, died in Paris at the age of sixty-three years.

THE death is announced on the 25th inst. of Sir Charles Reed, M.P., the much-respected chairman of the London School Board.

A METEOROLOGICAL observatory has been erected at Port-au-Prince, Haiti, under the care of the Rev. Father Wiek, on ground granted by the State. It is an octagon of two stories and a platform. Besides the indispensable instruments it has electric clocks (for communicating the time to clocks outside), telephones, microphones, phonographs, radiometers, &c.

THE inaugural meeting of a Society of Chemical Industry will be held in the rooms of the Chemical Society, Burlington House, Piccadilly, on April 4, at 4 p.m. This Society is not intended to represent any one particular branch of chemical industry. It is hoped that it will be representative of many manufactures—alkali-making, manure-making, the textile colour industries, the glass and pottery manufactures, tar distilling, soap-making, sugar-making, brewing, metallurgy, the manufacture of fine chemicals, and all other industries which show any connection with chemical science.

THE newly-issued part of the *Medical Reports* which are from time to time issued by order of the Inspector-General of Chinese Maritime Customs, contains an elaborate monograph by Dr. Duane B. Simmons on the subject of Beriberi, or the Kakké of Japan, which includes some interesting notes on the history and geographical distribution of the disease, and is illustrated by a sketch-map.

MR. BOWDLER SHARPE, F.L.S., delivered on Thursday last the concluding lecture of a series on the "Birds of the World," which he has been giving at Tonbridge School. Throughout the winter lectures have been given on various literary and scientific subjects by Prof. Henry Morley, Rev. A. Lucas, and others, and large and attentive audiences have shown great interest in all the series. The school already possesses a small museum, which is increasing under the auspices of the present head-master, the Rev. T. B. Rowe, who is evidently doing his best to encourage a taste for science and literature in the institution under his charge.

EVERY ornithologist should read a little pamphlet recently sent to us by the Dundee Naturalists' Society, entitled "The Grallatores and Natatores of the Estuary of the Tay; the great decrease in their numbers of late years; the causes; with suggestions for its mitigation. A paper read by Col. Drummond Hay." The author, whose long residence in the district alluded to renders his experiences doubly interesting, makes out a good case for his friends the birds in regard to their alleged destruction of fish and spawn, and no doubt some notice will be taken of his statements at the approaching Fisheries' Exhibition at Norwich. The principal cause in the decrease of the birds on the Tay he attributes chiefly to the increased number of gunners on the river, who disregard the close-season, while the wilful destruction of the sea-birds' eggs also plays sad havoc amongst their numbers. Drainage and cultivation of the land has also altered the conditions under which certain species nested, and has driven them further afield.

A Conference on the reform of the Educational Code is to meet in London in the third week in April, and to sit for two days, for the purpose of drawing up a series of recommendations, to be submitted in the form of a memorial to the Vice-President of the Committee of Council. The gentlemen invited to attend are persons conversant with the practical working of the public elementary school system, head-masters of secondary schools, persons experienced in education, and others interested. Invitations have been accepted by the chairmen of the Education and School Management Committees of the School Boards for London, Liverpool, Birmingham, Leeds, Sheffield, Bristol, Bradford, Leicester, and Nottingham; also by Dr. Abbott, Dr. Caldicott, Mr. Eve, Professors Max Müller, Carey Foster, Henrici, Gladstone, and Meiklejohn; Sir U. Kay-Shuttleworth, Sir. John Lubbock, the Rev. Mark Pattison, and numerous others.

MR. STEPHEN BRETTON, F.M.S., writes from Eastbourne to the *Times*, under date March 28, that he saw a meteor of great splendour that morning (1.15 a.m. Greenwich mean time), the finest he ever observed. Its size was apparently rather larger than Venus at her brightest, and for two or three seconds illuminated the heavens very brilliantly. Its colour was of an intense purple white, and moved somewhat slowly. He first noticed it a little south of Regulus, and going in direction of Castor. When immediately below Præsepe it burst into about five or six fragments, each about the size of a star of the third or fourth magnitude, these assuming a deep fiery red. It then immediately disappeared. The night was especially clear; temperature in air about 30°; barometer about 29·850.

THE Committee of the "Frank Buckland Memorial Fund" have decided that the memorial shall take the form of a bust to be placed in the Fish Museum at South Kensington; the purchase of an annuity to be presented to Mrs. Buckland; and, if there be any surplus, it will be applied in some way to promote the welfare of the fishermen of this country. The honorary secretaries are Col. Bridges and Mr. T. Douglas Murray, to whom subscriptions may be sent at 34, Portland Place.

SMART shocks of earthquake occurred at Agram on March 21 at 3h. 40m. a.m., duration three seconds, and on March 24 at 6h. 45m. a.m., both accompanied by loud subterranean noises.

THERE was another earthquake shock at Casamicciola on Sunday morning at 6.45.

M. VAN MALDEREN, who was the electrical engineer of the Alliance, and constructed the so long unrivalled magneto-electric machine belonging to this Company, died at Brussels at the age of seventy a few days ago.

ALL the obstacles which have prevented the reconstruction of the Sorbonne being accomplished, have been removed by M. Jules Ferry, and the work will begin immediately. The same may be said of the isolation of the Public Library of Paris, all the required expropriations having been decreed.

THE date for admission of exhibits to the International Exhibition of Electricity at Paris has been prolonged to April 15.

THE Geologists' Association Easter Excursion will be on Monday and Tuesday, April 18 and 19, to Salisbury, Stonehenge, and Vale of Wardour.

COLONEL PARIS, the head of the Paris fire brigade, has concluded his report on the destruction of the Printemps Establishment by proposing that large warehouses be compelled to light by electricity. The burning of the Nice Theatre, which was occasioned by a gas explosion, has given a new importance to that movement.

M. DE MERITENS has completed the construction of one of his magneto-electric engines intended for lighthouse illumination. An experimental trial took place on March 25 before MM. Becquerel, Cornu, Mascart, and other members of the Technical Commission of the International Exhibition. It was proved that with fifteen horse-power his machine illuminates at once more than thirty Jablochkoff lights, and that it could, at a moment's notice, be used in a regulator for marine purposes.

MR. THOMAS EDWARD, the Banff naturalist, has reprinted in a separate form some useful and interesting papers on the Protection of Wild Birds. The pamphlet is to be had at the *Banffshire Journal* Office.

THE additions to the Zoological Society's Gardens during the past week include an Egyptian Gazelle (*Gazella dorcas*) from Egypt, presented by the Earl of March, F.Z.S.; a Common Genet (*Genetta vulgaris*), South European, presented by the Rev. F. P. Voules; a Giant Toad (*Bufo agua*) from Brazil, presented by Mr. Carl Hagenbeck; a Long-snouted Snake (*Passerita mycterizans*) from India, presented by Mr. H. H. Black; an Amherst's Pheasant (*Thaumalea amherstiæ*) from Szechuen, China, a Black Swan (*Cygnus atratus*) from Australia, purchased; a Tiger (*Felis tigris*), a Bactrian Camel (*Camelus bactrianus*), a Sambur Deer (*Cervus aristotelis*), born in the Gardens.

OUR ASTRONOMICAL COLUMN

A NEW VARIABLE STAR.—On July 26, 27, and 29, 1783, D'Agelet observed a star which he twice estimated 6m., and on the last night 6·5m.; it is No. 5057-9 in Gould's reduced catalogue, the mean of the three observations giving for 1800, R.A. 19h. 23m. 47·57s. and Decl. + 17° 19′ 42″·8. The only subsequent observation we have yet found of this star is in the *Durchmusterung*, where it is rated as low as 9·4m.; there is consequently a high probability that it will prove to be a remarkable variable. The position brought up to the beginning of 1880 will be R.A. 19h. 27m. 22·1s., Decl. + 17° 29′ 28″. D'Agelet's original observations will be found at pp. 542, 544, and 546 of the *Histoire Céleste* of Lalande.

MINIMA OF ALGOL, ETC., IN 1880.—Prof. Julius Schmidt has published his observations, or rather the results of his observations, of Algol and other variable stars, made at Athens during the past year. On comparing his epochs of minima with the formula in Prof. Schonfeld's last catalogue, it will be found that according to the most completely determined minima the calculation is too late by nearly half an hour. But the differences between calculation and observation are very irregular, so that if we take a mean of the whole, the true minimum would appear to be earlier than that computed by only nineteen minutes. The minima between August 28 and December 21 are here compared.

According to the observations of the same indefatigable astronomer *Mira Ceti* was at a maximum between July 20 and 25, but in 1880 it only attained about 4·2 m. A maximum of R Leporis occurred about November 9; the determination is not very certain. The intervals between maximum and minimum, and *vice versâ* of α Herculis were as irregular as usual.

THE RED SPOT UPON JUPITER'S DISK.—Dr. Jedrzejewicz has published some inferences from observations for ascertaining the time of rotation of the eastern extremity of the large red spot upon the disk of Jupiter, made at his private observatory at Plonsk during the winter of 1880-81. The instrument employed is a refractor six inches aperture, with powers 225 to 300. In December he measured the length of the spot 9″·8, and considers that his own observations compared with those of Prof. Schmidt at Athens, indicate that the length of the spot remained unchanged during the winter. On this assumption he finds for the time of rotation 9h. 55m. 34·414s. ± 0·13s, by 174 rotations between November 25, 1880, and February 5, 1881. Prof. Schmidt from 1021 rotations between July 23, 1879, and September 17, 1880, obtained the value 9h. 55m. 34·422s. ± 0·05s. for the middle of the spot. In 1862, by observations upon a spot which he says was much darker and a more favourable object for the purpose than the spots observed by Airy and Mädler in 1834-35, and which was not much larger than the shadow of the third satellite he had found for the time of rotation 9h. 55m. 25·684s. agreeing with the previously-determined values. While the period from observations of the red spot is 9s. greater, Prof. Schmidt remarks that it agrees very nearly with that already obtained by Mr. Pratt.

THE MINOR PLANETS.—It appears that the object detected by Herr Palisa at the new Observatory of Vienna on the 23rd of last month, and which was announced as No. 220 of the small-planet group, may prove to be No. 139 *Juewa*, which had not been observed since 1874. It was discovered by the late Prof. Watson at Pekin on October 10 in that year, while he was engaged upon one of the United States expeditions for the observation of the transit of Venus, and as was reported at the time, without the aid of a chart of telescopic stars, but from his memory of their configuration about the particular spot occupied by the planet. It was observed on November 8 by Rümker at Hamburg, but the length of observation was not sufficient to determine the mean motion with any degree of accuracy: hence although the elements had been several times brought up to more recent dates by Watson, the planet had not been recovered up to last month.

By the last Berlin circular it would seem that *Ismene* will fall little short of *Hilda* in the length of its revolution, and these two minors will thus stand out as exceptional members of the group. By the latest elements the period of *Hilda* is 2860 days or 7·832 years, and that of *Ismene* 2854 days or 7·814 years.

Calculation has assigned the shortest period to No. 149 *Medusa*, but this awaits confirmation, perhaps in the next summer, when the planet should again come into opposition according to the imperfect elements at present available.

PHYSICAL NOTES

M. PLANTAMOUR continues to study with his sensitive levels the phenomena of periodic rise and fall of the ground which he has observed in Switzerland. He believes he has established a connection between these periods and those of the changes of temperature of the earth's surface, there being an annual change of level in an east-west direction corresponding with the mean temperatures of the surface during the year.

M. ROSENSTIEHL concludes from his researches on the sensations of colour recently noticed that the three fundamental colour sensations of the Young-Helmholtz-Maxwell theory correspond to the following tints of the pure spectrum. *Orange-red*, three-fourths of the distance from C to D amongst the Fraunhofer lines, a *yellow-green* three-quarters of the distance from D to E, and a *blue* situated at one-third from F towards G. The principle upon which this selection is made is that the selected tint fulfils the following conditions: (*a*) it is equidistant between two tints which are complementary to one another; (*b*) it produces with either of the other selected tints another colour having a minimum of white admixed with it. Thus the yellow-green chosen is midway between that yellow and that blue which produce the best white with one another, and it gives with the selected orange-red a yellow more intense than any known yellow pigment under equal illumination, and with the selected blue gives a green more intense than the richest green pigment.

M. HENRI BECQUEREL observes that the specific magnetism of ozone exceeds that of oxygen, and is much greater than could be accounted for by the difference in density of these two allotropic forms of the gas.

IN view of recent terrible colliery explosions in Belgium, M. Cornet has called attention (in the Belgian Academy) to a possible interference of winds, blowing in an inclined direction, with the proper ventilation of mines. Most of the "fiery" Belgian mines have two shafts, one for raising the coal and for descent of air, which, passing along the galleries, is drawn up the other shaft by a ventilating engine. The orifice of the latter shaft is generally (unlike that of the other) unsheltered by buildings; it debouches directly in the air a little above the ground. Obviously, then, a strong wind, blowing with downward inclination towards this orifice, might seriously affect the ventilating action. It is noted that one explosion in Hainaut on November 19, 1880, followed a night of very high wind, which M. Cornet shows to have been capable of depressing ventilation considerably. Mines with large sections are more dangerous than others in atmospheric perturbations. The true remedy, however (in the author's opinion), is not increasing the resistance to the air-currents, but sheltering the orifices of the ventilating shafts against descending winds.

IN a recent paper on the optical structure of ice (to the Freiburg Society of Naturalists) Prof. Klocke finds that while in the ice individuals the plane of the secondary axes is fixed by the position of the principal axis, they are subject to no law as to direction in that plane.

THE phenomenon of *verglas* occurred at Urbino in Italy twice in January; and from his observations of it Prof. Serpieri con-